

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:

Igarashi et al.

Group Art Unit: 2879

Application No.: 10/566,723

Examiner: Thomas A. Hollweg

Filed: February 2, 2006

For: ORGANIC ELECTROLUMINESCENT DEVICE

DECLARATION UNDER 37 C.F.R. §1.132

Sir:

I, Toshihiro Ise, a citizen of Japan, hereby declare and state that:

1. I received a Doctoral Degree in Chemistry from Tohoku University, Graduate School of Science in March 1999;
2. I joined Fuji Photo Film Co., Ltd. in April 1999, and have been engaged in the research and development of organic electroluminescence devices since that time; and
3. I am familiar with the Office Action dated August 12, 2009, and understand the Examiner's rejections therein.

The following additional experiments were carried out by me or under my supervision in order to show the external quantum efficiency of the organic electroluminescent device described in Sato et al. (US 2003/0218418A9).

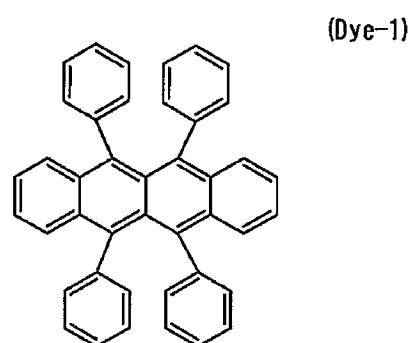
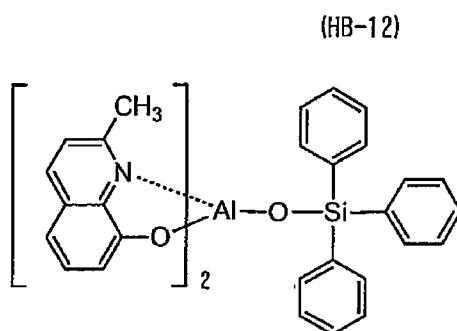
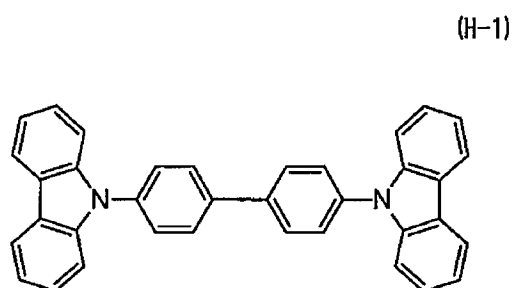
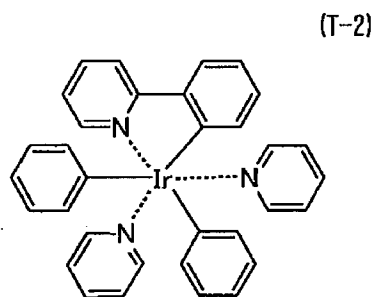
EXPERIMENTS

Preparation of EL Device of Example 4 described in Sato et al.

A cleaned ITO substrate was set in a vacuum deposition apparatus. 4,4'-bis[N-(1-naphthyl)-N-phenylamino]-biphenyl was deposited on the substrate to a thickness of 60nm. Then, Compound (H-1), Iridium Complex (T-2) and Fluorescent Compound (Dye-1) were deposited thereon in a ratio of 93:5:2 to a deposition thickness of 30nm to form a light-emitting layer. Then a compound (HB-12) was deposited thereon to a deposition thickness of 10 nm. Further, Alq₃ (Al(C₉H₆NO)₃) was deposited thereon to a deposition thickness of 35nm.

A pattern mask was put on the organic thin film thus formed, and magnesium fluoride was deposited to a thickness of 1.5 nm. Then, aluminum was deposited to a thickness of 40 nm, and silver was further deposited to a thickness of 40 nm, thereby completing a cathode. In this way, a comparative EL device in accordance with the description of Sato et al. was fabricated.

The compounds described are shown as follows.



Measurement of External Quantum Efficiency

Using a source measure unit 2400 manufactured by Toyo Corporation, a DC constant voltage was applied to the EL device thereby permitting it to emit light, and the luminance thereof was measured by a luminance meter BM-8 manufactured by Topcon Corporation. Further, the emission spectrum and emission wavelength were determined using a spectrum analyzer PMA-11 manufactured by Hamamatsu Photonics K.K. Then, the external quantum efficiency of the EL device was calculated from the measurements in accordance with the luminance conversion method. As a result, the external quantum efficiency at 1000 cd/m² was 2.8%.

Therefore, it is considered that the EL device of Example 4 described in Sato et al. has an external quantum efficiency outside of the range recited in claim 1 of the present application.

CONCLUSION

It is clarified that the EL device described in Sato et al. has a far lower external quantum efficiency compared to the presently claimed invention.

I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further, that these statements were made with the knowledge that willful false statements and like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Date: Nov. 10, 2009

Toshihiro Ise

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